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**US 6321242 A** **US 5978842 A**  
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(58) Field of Search

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(54) Abstract Title

**A method of automatically generating an e-mail message when a web page contains a dead hyper-link**

(57) A software method comprises browser software that, if an internet user cannot connect to a Uniform Resource Locator (URL) pointed to by a dead hyper-link on a page/document (eg a web-page), performs a network conductivity test and then automatically generates an e-mail message which is sent to the web-master of the web-page that contained the dead hyper-link. The decision to initiate this process and send the message would be left to the user of the browser software. To facilitate this web pages would include within a header section of html code a special type of entry giving the e-mail address of the web-master. When a user clicks on a dead hyper-link the browser searches for the special entry which, after verifying internet connectivity, displays a button, on the same web-page, that a user can click on to send the automatic e-mail message.

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## Automatic generation of messages to assist the removal of dead hyper-links

### 5 **Introduction**

The world wide web is becoming one of the most important methods of accessing documents, or pages, whether simple text or diagrams, pictures, animated illustrations, video clips etc which may be contained within the documents. The pages  
10 are addressed by an Uniform Resource Locator (URL) which indicates the protocol required to interpret them, the computer on which it is held, and the address of the file held on the computer. Information is viewed using a web browser running on a computer such as Netscape Navigator or Microsoft Internet Explorer, or other technology such as adapted televisions, or mobile telephones. The term web browser  
15 will be used herein to include all such technologies.

The distinguishing feature of the world wide web is the use of hyper-links which are typically highlighted sections of text which when selected, usually by a mouse click, will cause the browser to download and display another document, or web page,  
20 pointed to by the hyper-link. The means used for this is normally for the displayed page to be defined by a source file written in Hyper Text Markup Language (HTML) which is stored on the web page's host computer and is transmitted to the browser by communications means, normally involving the internet. This language contains instructions used for formatting the displayed page and other functions, as well as for  
25 the implementation of hyper-links. For example the source file might contain:

... Jonah was swallowed by the <A HREF=http://www.purplewhale.com>  
whale</A>.....

which would be displayed on the screen as:

...Jonah was swallowed by the whale .....

30 Other documents, such as those written in Microsoft Word, may also contain hyper-links which when selected launch a web browser to display the page referred to. The invention described herein is equally applicable to any such software means for displaying such files or pages which may contain hyper-links, and such means are included within the class of browsers for the purpose of this document.

35 One increasingly common annoyance in using the world wide web, though, is the fact that many of the hyper-links point to pages which no longer exist, have been moved elsewhere or have never been set up properly. In all these cases the web browser just returns a message to the effect that the URL in question cannot be reached. The  
40 purpose of this invention is to expedite the remedy of such dead links. Although there may be the possibility of e-mailing the web site manager to let him know of the problem, few users do this as it is usually just too much bother to collate the relevant facts and then e-mail the web page author or webmaster. The problem is inherent in the concept of the world wide web and arises in that there is no way the owner of a  
45 web site can know which other sites point to it, and whether problems will arise if it is changed, moved or deleted. The same result may occur due to a temporary break in network connectivity, and this would generate a false alarm and it is important to reduce the number of such false alarms.

## ***The Invention***

The proposed solution to this is for the browser software to perform a network connectivity test and then automatically generate an e-mail message to be sent to the author or web-master of the page which contained the dead hyper-link. The decision to initiate this process and send the message would preferably be left to the user of the browser software. To facilitate this web pages would include within the header section of the html code, a special type of entry giving the e-mail address of the person responsible for maintenance of the web page. When writing web pages with a hyper-text editor, this would either prompt the user for an e-mail address at the start of each page or leave it at a default value previously determined by the software

On reaching a dead or malfunctioning hyper-link, the user would initiate the process, whereupon the browser would search for the special entry. If one were found, having verified internet connectivity, it would display on the same page as the message, a button which the user could click on to automatically send an e-mail reporting the fault. This would preferably be of standard form giving the URL of the web page on which the hyper-link exists, which hyper-link was attempted and what remote URL was unsuccessfully attempted to be accessed. It could also possibly return the HTML source of the web page with the affected URL highlighted, and possibly with suggestions for fixing the problem. It would also send other helpful diagnostics, such as whether the problem was in finding the host on the name server, accessing the host or accessing the web site on the host, as well as time, software versions etc.

This would require a specific enhancement of HTML, with a new instruction keyword, say "WEBMASTER". e.g.

```
<WEBMASTER ADDRESS="myname@mailserver.com"></WEBMASTER>
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This syntax has the advantage that it would have no effect on the normal appearance of the web page. There would obviously need to be changes to web browsers to use this information, and preferably in authoring software to prompt for its inclusion.

As mentioned above, it is important that a check be made to ensure that the machine in question is in fact connected to the internet. This could be most simply done by accessing some specific URL, which would provide acknowledgement. The only potential problem with this would be the use of proxy servers which may provide filters (eg family filters) which would prevent sites being reached. There would be no problem so long as such servers correctly report "access denied" rather than simply making sites unreachable.

Internet connectivity could be assessed by attempting connection to a specific web site. However the preferred method is for the browser to use a special SMTP server preferably hosted by the browser manufacturer. Connection to it could be used to provide automatic filtering of the messages, e.g. malicious misuse of the facility which might be identified by an excessive number of reports coming from a particular user, and generate network diagnostic statistics as well as testing internet connectivity. The browser software itself could, of course, provide this filtering itself before the message were sent in stead or as well. The browser software would obviously just cancel any message which could not be delivered immediately.

The method could be used on networks not connected to the internet, but the mail server would obviously need to be on the network, which would require the provision of a means to change the identity of the special mail server.

- 5 The invention described would be a useful feature not only for the authors of web sites and for those encountering dead hyper-links who would possess such enhanced browsers, but also all other users of the world wide web due to the reduction of dead hyper-links.

## **Claims**

- 5 1. A software method for the automatic generation of e-mail messages when a user of the internet is unable to connect to an Uniform Resource Locator (URL) pointed to by a hyper-link on a web page or other referring document, to be sent to whoever is responsible for the maintenance of the web page which contains the hyper-link.
- 10 2. A method according to (1) in which the e-mail address of the person to whom the message is to be sent is contained within the source of the web page.
3. A method according to (2) in which the address is recorded within the source code of the page being displayed by means of an additional instruction devised for the purpose.
- 15 4. A method according to (1), (2) or (3) in which the final authority for transmitting the message rests with the user of the software by providing input to the browser.



INVESTOR IN PEOPLE

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Claims searched: 1 to 4

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## Patents Act 1977 Search Report under Section 17

### Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:  
UK Cl (Ed.T): G4A (AUIDB, AUXX).  
Int Cl (Ed.7): G06F 17/30, 17/60.  
Other: ONLINE: WPI; EPODOC; JAPIO; INTERNET.

### Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	US 6321242 B1 (FOGG et al)	
A	US 5978842 (NOBLE et al)	
X	<a href="http://www.informatica-didactica.de/HyFISCH/ZieleWerkzeug/HyperwaveDokumentation/LinkIntegrityLennon.htm">http://www.informatica-didactica.de/HyFISCH/ZieleWerkzeug/HyperwaveDokumentation/LinkIntegrityLennon.htm</a>	1 to 4.
X	<a href="http://www.linkalarm.com/what/index.html">http://www.linkalarm.com/what/index.html</a>	1 to 4.
A	<a href="http://www.pumatech.com/mind-it_service/service.html">http://www.pumatech.com/mind-it_service/service.html</a>	1 to 4.

X Document indicating lack of novelty or inventive step  
Y Document indicating lack of inventive step if combined with one or more other documents of same category.  
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A Document indicating technological background and/or state of the art.  
P Document published on or after the declared priority date but before the filing date of this invention.  
E Patent document published on or after, but with priority date earlier than, the filing date of this application.